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THE DECLINE OF UNIONIZATION IN THE UNITED STATES:  
WHAT CAN BE LEARNED FROM RECENT EXPERIENCE?

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The Decline of Unionization in the United States:

What Can Be Learned From Recent Experience?\*

Henry S. Farber

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ABSTRACT

The dramatic decline in unionization over the last decade is investigated in the context of a supply/demand model of union status determination. Data from surveys conducted in 1977 and 1984 are used to decompose the decline into components due to a drop in the demand for union representation and a drop in the supply of union jobs relative to demand. It is found that there has been a substantial drop in demand that can be accounted for by an increase in the job satisfaction of nonunion workers and a decrease in nonunion workers' beliefs that unions improve wages and working conditions. It is also found that there has been a substantial drop in the supply of union jobs relative to demand that is attributed to an increase in employer resistance to unionization. Increased foreign and increased nonunion domestic competition (particularly in deregulated industries) are cited as the likely key underlying causes of these changes.

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## I. Introduction

The last fifteen years have seen a precipitous decline in the extent of unionization in the United States. Based on data from the May Current Population Surveys summarized in table 1, the fraction of private nonagricultural employment made up of union members has fallen from 25.6 percent in 1973 to 14.1% in 1985. The reasons for this decline are not clear.

Table 1:  
Union Membership as Fraction of Nonagricultural Employment  
1973-1984  
(Based on tabulations of May CPS's)

1973	.256	1980	.208
1974	.249	1981	.197
1975	.230	1982	---
1976	.226	1983	.159
1977	.218	1984	.150
1978	.209	1985	.141
1979	.220		

One potential explanation is that the decline is due to increased employer hostility toward unions and union organizing activity (Freeman and Medoff, 1984; Freeman, 1985). Another potential explanation is that increased competitiveness of American markets, partly due to the past behavior of the unions themselves, has resulted in unions having less to offer workers today than they did in the past. A third potential explanation is that shifts in the demographic, industrial, and occupational composition of the labor force away from traditionally heavily unionized types of workers and sectors can account for at least part of the decline in unionization (Farber, 1985; Dickens and Leonard, 1985).

Of course, these positions are neither independent nor mutually exclusive. For example, it may be that the increased competitiveness of the domestic and world economy makes it difficult for unionized firms to compete if their labor costs are higher than their foreign or nonunion domestic competition. This has the implications that employers will resist

unionization more strenuously and that potentially unionizable workers will feel that unions cannot offer the advantage of higher levels of compensation without an unacceptable risk to employment. In addition, these same forces may have caused part of the shift in employment away from traditionally heavily unionized blue-collar manufacturing jobs.

In this study a model of the determination of the union status of workers, based on the work of Farber (1983), is used to decompose the decline in unionization into separate components due to a decline in demand and a decline in supply relative to demand. While the usual data on the union status of workers is not sufficient to identify shifts in demand and supply separately, data from the 1977 Quality of Employment Survey (QES) and a survey done by Louis Harris and Associates for the AFL-CIO in 1984 contain information that can be used for this decomposition. These data provide the focus of the empirical analysis.

The central findings are that the decline in unionization since 1977 is accounted for by 1) increased employer resistance to unionization (probably due to increased product market competitiveness) resulting in a decrease in the supply of union jobs relative to demand and 2) decreased demand for unionization by nonunion workers due to an increase in the satisfaction of nonunion workers with their jobs and a decline in nonunion workers' beliefs that unions are able to improve wages and working conditions. The evidence further suggests that shifts in the demographic, industrial, and occupational composition of employment can explain little of the decline in unionization between 1977 and 1984.

## II. A Supply-Demand Model of the Extent of Unionization

The simplest empirical model of the union status of workers is a univariate discrete choice model. In this model a worker is unionized ( $U_i = 1$ ) only if some latent variable,  $Y_{1i}$ , is positive. The interpretation generally

given to this latent variable (for example, Lee, 1978) is that it represents the difference between worker  $i$ 's utility on a union job and his/her utility on a nonunion job. Given that

$$(II.1) \quad Y_{1i} = X_i \beta_1 + \varepsilon_{1i},$$

where  $X_i$  is a vector of worker characteristics,  $\beta_1$  is a vector of parameters, and  $\varepsilon_{1i}$  is a random component, the probability of a worker being unionized is

$$(II.2) \quad \Pr(U_i=1) = \Pr(Y_{1i} > 0) = \Pr(\varepsilon_{1i} > -X_i \beta_1).$$

If  $\varepsilon_{1i}$  has a standard normal distribution then this is the usual probit model so that  $\Pr(U_i=1) = \Phi(X_i \beta_1)$  where  $\Phi(\cdot)$  is the standard normal cumulative distribution function.

A key assumption underlying this model is that all workers who desire union representation are actually working on a union job. However, there are good reasons to believe that there is, in fact, excess demand for vacancies in existing union jobs (Abowd and Farber, 1982; Farber, 1983). This implies that not all nonunion workers who would prefer their job to be unionized by the criterion outlined above ( $Y_{1i} > 0$ ) are willing or able either to find a union job or to organize their current job. To the extent that this is true,  $\Pr(U_i=1) \neq \Pr(Y_{1i} > 0)$ . There will be some nonunion workers for whom  $Y_{1i} > 0$ , and the univariate probit model of union status summarized in equations II.1 and II.2 loses its structural interpretation. However, it is still useful as a summary of the data.

It is reasonable to ask why all workers who would prefer their job to be unionized do not organize their job or find a union job. Some nonunion workers might not be willing to take a *different* job simply because it is

unionized because to do so would entail the sacrifice of seniority rights and other valuable aspects of their current job.<sup>1</sup> Second, some workers may prefer their current job to be unionized, but they may not be willing to undertake the costs of organization and petitioning for an election. These costs are bound to exceed the costs of simply supporting an already existing organization through the payment of dues where others have borne the cost of organization. Even if some workers might be willing to invest time and effort in a union organizing drive, such an effort might not be successful so that the job would remain nonunion. Finally, some workers who may be willing to quit their current job to take a union job might not be offered a job by a unionized employer.

The implication of this discussion is that there are likely to be queues for vacancies in existing union jobs in the sense that there will be nonunion workers who would like the benefits of a union job but who would not be willing to undertake organization themselves. In this context the demand for union representation is composed of two distinct groups of workers. The first group consists of those workers who demand union representation and were hired by a union employer. This group is easy to identify. They are simply the workers who report themselves to be unionized. The second group consists of workers who demand union representation but are unable or unwilling either to find a union job or to organize their current job. This group is more difficult to identify since they are a subset of the workers who report themselves as not union members.

The key to the analysis in this study is that data are available in 1977 and 1984 that can be used to split the group of nonunion workers into a group that prefers union representation and a group that does not. Essentially,

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<sup>1</sup>See Abraham and Medoff (1984, 1985) for evidence on the importance of seniority in nonunion workplaces.

nonunion workers were asked if they would prefer their job to be unionized, and the response to this question (No=0, Yes=1) is interpreted as an indicator of whether the worker feels that he/she would be better off if the job were unionized ( $Y_{1i} > 0$ ). It is argued that the workers who are in the queue for union jobs are identified by their response to this question (called VFU here) and that this measures the demand for union representation among nonunion workers. A worker is classified as demanding union representation ( $D_i = 1$ ) if he/she is unionized ( $U_i = 1$ ) or he/she is not unionized and responds affirmatively to the union preference question ( $VFU_i = 1$ ).

In the light of these considerations, a useful tool for the analysis of the decline of unionization is an economic model based on movements in the supply of and demand for union representation. A stylized version of such a model has two components. First, the demand for union representation is based on the model of rational choice, outlined above for the simple univariate model of union status determination. Second, the supply of union jobs is based on the amount of organization undertaken by unions and the success of these efforts as they affect the number of union jobs available. The quantity of unionization is determined by the minimum of demand and supply.

Note that these notions of supply and demand are interdependent. Employer behavior in response to the threat of unionization will affect both the net benefits of unionization to workers (demand) and the expected net benefits of unionization to unions (supply). Employer responses can range from higher wages and "union-like" personnel policies on the one hand to outright resistance to union organizing efforts and implicit discrimination against union supporters on the other. Nevertheless, the distinction will prove useful.

The demand for union representation by an individual worker is a discrete choice problem where the worker compares his/her utility on union and nonunion jobs and selects the job with the higher utility. This utility

difference is defined above (equation II.1) as  $Y_{1i}$ . Thus, worker  $i$  will prefer union representation ( $D_i=1$ ) only if  $Y_{1i}$  is positive, and worker  $i$  does not prefer union representation ( $D_i=0$ ) otherwise. On this basis, the probability that worker  $i$  prefers union representation is

$$(II.3) \quad \Pr(D_i=1) = \Pr(Y_{1i} > 0) = \Pr(\varepsilon_{1i} > -X_i \beta_1).$$

This is the fundamental relationship for the demand for union representation. Given data on  $D_i$  for *all* workers and assuming a standard normal distribution for  $\varepsilon_{1i}$ , the parameter vector  $\beta_1$  can be estimated using standard univariate probit maximum likelihood techniques.

The notion of the supply of union jobs relative to demand is based fundamentally on ability of workers who demand union representation to find a union job. This will depend not only on the characteristics of the particular worker but also on employer behavior with regard to unions and organizing as it affects the total number of union jobs available. For example, more active employer resistance to unionization will undoubtedly result in the existence of fewer union jobs, and this will reduce the ability of workers who demand union representation by the criterion outlined above to find a union job.

More formally, suppose that a worker who demands union representation is able to find a union job ( $S_i=1$ ) only if some index  $Y_{2i}$  is positive and is not able to get a union job ( $S_i=0$ ) otherwise. Let

$$(II.4) \quad Y_{2i} = X_i \beta_2 + \varepsilon_{2i}$$

where  $\beta_2$  is a vector of parameters, and  $\varepsilon_{2i}$  is a random component. Thus, the probability that worker  $i$  who prefers union representation is able to find a union job is

$$(II.5) \quad \begin{aligned} \Pr(S_i=1|D_i=1) &= \Pr(U_i=1|D_i=1) \\ &= \Pr(Y_{2i} > 0) = \Pr(\varepsilon_{2i} > -X_i \beta_2). \end{aligned}$$

Given data on  $U_i$  for *all* workers who demand union representation and assuming

a standard normal distribution for  $\varepsilon_{2i} | D_i = 1$ , the parameter vector  $\beta_2$  can be estimated using standard univariate probit maximum likelihood techniques.<sup>2</sup> This conditional probability is fundamentally related to the supply of union jobs, and it neatly accounts for much of the confusion of factors that affect demand and supply because it is a measure of the supply of union jobs *relative* to demand.

Based on these relationships, a worker  $i$  will be unionized ( $U_i = 1$ ) only if he/she both prefers a union job and is able to find one ( $Y_{1i}$  and  $Y_{2i}$  are positive). The probability of this event is

$$\begin{aligned} \text{(II.6)} \quad \Pr(U_i = 1) &= \Pr(D_i = 1) \cdot \Pr(S_i = 1 | D_i = 1) \\ &= \Pr(Y_{1i} > 0) \cdot \Pr(Y_{2i} > 0). \end{aligned}$$

It is clear that with data only on union status it is not possible to estimate the determinants of demand ( $Y_{1i}$ ) and supply ( $Y_{2i}$ ) separately with any robustness. However with data on the demand and supply, such estimation is possible.<sup>3</sup>

### III. The Data and Sampling Issues

Data from two surveys that contain information on nonunion worker demand for union representation independent of union status are used in the analysis.

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<sup>2</sup>Farber (1983, 1984) develops and estimates a multivariate probit model where  $\varepsilon_{2i}$  has a standard normal distribution so that  $\varepsilon_{2i} | D_i = 1$  has a distribution that depends on the joint distribution of  $\varepsilon_{1i}$  and  $\varepsilon_{2i}$ . Farber (1984) derives estimates of  $\beta_2$  using both the univariate probit model and the multivariate probit model based on the 1977 QES data, and they are virtually identical. On this basis, the analysis proceeds using the more straightforward univariate probit model. This is equivalent to assuming that  $\varepsilon_{1i}$  and  $\varepsilon_{2i}$  are independently distributed.

<sup>3</sup>In fact, it is possible to derive estimates of the determinants of demand and supply separately with data only on union status, but identification will depend crucially on the functional forms chosen for the distributions of  $\varepsilon_{1i}$  and  $\varepsilon_{2i}$ . See Poirier (1980).

The first survey (QES) is the Quality of Employment Survey (QES), which was carried out by the Survey Research Center at the University of Michigan in 1977 (Quinn and Staines, 1979). The second survey (AFL) was carried out by Lewis Harris and Associates Inc. for the American Federation of Labor - Congress of Industrial Organizations in 1984 (Lewis Harris and Associates, 1984).

The QES was designed to be a representative sample of American workers. However, the AFL survey is not representative of the workforce in that, since its goal was to learn about the attitudes of nonunion workers toward unions in order to aid organizing efforts, unionized workers were "quota sampled". Workers were contacted randomly by Harris, and all nonunion workers who met certain criteria (age over eighteen, employed, not self-employed) were administered the survey. Union workers who were contacted and who met the criteria were administered the survey until a quota of 250 was reached. Any union workers contacted after this point were counted but not administered the survey. Given the central role that union membership plays as an endogenous variable in the analysis, this creates a classic choice-based sampling problem (Manski and Lerman, 1977; Manski and McFadden, 1981). This is accounted for in the analysis that follows in two ways. Where frequencies are analyzed, the counts are weighted appropriately. Where probit models involving the probability of union membership are estimated, a straightforward modification (to accommodate the discrete choice nature of the problem) of the maximum likelihood choice-based sampling procedure suggested by Hausman and Wise (1981) is used.

Samples of workers were derived from the two surveys in an identical fashion. These samples consist of all non-managerial workers who were not self-employed and for whom complete information was available on the workers' demographic characteristics, industry, occupation, union status, preference for union representation, attitudes about the general usefulness of unions,

and job satisfaction. The QES sample has 920 observations while the AFL sample has 1082 observations. Table 2 contains sample proportions (both overall and for 1977 and 1984 separately) for the labor force structure measures that are used in the analysis.

In order to account for the undersampling of union workers in the AFL survey, the degree of undersampling needs to be estimated. Actually, this is quite simple because Harris kept track of the number of union workers who were "quota'd out". After administering the survey to the 250 union workers, an additional 28 union workers were contacted but not surveyed. Assuming (as is reasonable) that the sample selection criteria outlined above have the same proportional impact on those actually surveyed and those who were quota'd out, the probability of observing a randomly selected union worker who meets the sample selection criteria in the final sample is simply  $.899 = 250/278$ . On this basis a value of .9 is used for this probability, and counts of union workers from the AFL sample are weighted by  $1.11 = 1/.9$ .

The key information contained in both the QES and the AFL survey is the response of nonunion workers to a question (VFU) asking whether they would vote for union representation on their current job if a secret ballot election were held. The response to this question (No=0, Yes=1) is interpreted as an indication of the worker's demand for union representation. An affirmative response (VFU=1) suggests that the worker feels he/she would be better off if the job were unionized ( $Y_{1i} > 0$ ). Similarly, a negative response suggests that the worker feels he/she would be better off if the job were not unionized ( $Y_{1i} < 0$ ).

Neither survey asks the analogous question of unionized workers. However, since nonunion jobs are relatively freely available, it is assumed that all unionized workers are unionized because they prefer their jobs to be unionized and that they would answer the VFU question affirmatively ( $Y_{1i} > 0$ ). This is clearly not completely accurate, and there are likely to be some

unionized workers who would prefer their job not to be unionized. However, there is relevant evidence from the National Longitudinal Surveys of Young Men and Young Women which asks the VFU question of unionized workers in 1980 and 1982 respectively. In samples constructed similarly to those used in this study, only about 11% of unionized workers reported that they prefer their job not to be unionized.<sup>4</sup>

Simple tabulation of the data confirm the dramatic decline in unionization between 1977 and 1984. Fully 32.9% of the workers in the 1977 QES reported that they were union members while only 20.1% (21.8% weighted) of the 1984 AFL survey reported that they were union members. Tabulation of the data also verifies that the demand for union representation and the supply of union jobs relative to demand fell between 1977 and 1984. The demand for union representation among nonunion workers,  $\Pr(D=1|U=0)$ , is the fraction of the nonunion sample that responded affirmatively to the VFU question. This fell from 39.5% in 1977 to 32.4% in 1984. The overall demand for union representation,  $\Pr(D=1)$ , is the sum of the fraction of the sample that is unionized and the fraction of the sample that is nonunion and responded affirmatively to the VFU question. On this basis, the demand for union representation fell from 59.5% in 1977 to 47.1% (weighted) in 1984. Finally, the supply of union jobs relative to demand is measured by the fraction unionized of the workers who demand union representation. This is  $\Pr(U=1|D=1)$ , and it fell from 55.4% in 1977 to 46.3% (weighted) in 1984. These frequencies are summarized in table 3, and the sample proportions of the labor force structure measures for the workers who demand union representation are contained in the last column of table 2.

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<sup>4</sup>These data are not analyzed in detail here because they sample only a limited age range of workers (late twenties to late thirties).

TABLE 2  
Sample Proportions of Labor Force Structure Variables  
(unweighted)

Variable	All	1977 (QES)	1984 (AFL)	Demand Subsample (U=1 or U=0,VFU=1)
Sex:				
female	.435	.398	.466	.424
male	.565	.602	.534	.576
Race				
nonwhite	.119	.126	.113	.181
white	.881	.874	.887	.818
Region				
South	.328	.350	.309	.295
Nonsouth	.672	.650	.691	.705
Education				
<12 years	.166	.223	.117	.198
=12	.365	.367	.364	.395
12-15	.226	.218	.232	.200
≥16	.243	.192	.287	.207
Age				
<25 years	.179	.202	.160	.176
25-34	.330	.307	.349	.335
35-44	.216	.198	.231	.218
45-54	.159	.168	.151	.151
≥55	.116	.125	.109	.120
Industry				
manufacturing	.262	.304	.226	.276
construction	.103	.058	.141	.091
transport, comm., public utils.	.087	.079	.093	.101
trade	.142	.146	.139	.127
finance, insur., real estate	.050	.039	.060	.030
services	.356	.374	.341	.375
Occupation				
blue collar	.404	.421	.389	.467
clerical	.201	.188	.213	.155
service	.127	.142	.114	.153
professional	.218	.222	.214	.190
sales	.050	.027	.070	.035
Sample Size	2002	920	1082	1044

Table 3: Summary Statistics for QES and AFL Samples  
(union counts weighted for AFL sample)

	n	Pr(U=1)	Pr(D=1 U=0)	Pr(D=1)	Pr(U=1 D=1)
QES (1977)	920	.329	.395	.595	.554
AFL (1984)	1082	.218	.324	.471	.463

With this information, the decline in union membership from 32.9% in 1977 to 21.8% in 1984 can be broken out into components due to the drop in demand from 59.5% to 47.1% and the drop in supply relative to demand from 55.4% to 46.3%. Taking the differential of equation (III.6) yields

$$(III.1) \quad \Delta \Pr(U_i=1) = \Delta \Pr(D_i=1) \cdot \Pr(S_i=1|D_i=1)] + \Pr(D_i=1) \cdot \Delta \Pr(S_i=1|D_i=1)] \\ + \Delta \Pr(D_i=1) \cdot \Delta \Pr(S_i=1|D_i=1)].$$

The first term represents the effect of a change in demand, the second term represents the effect of a change in supply, and the last term is a second order term that can be safely ignored here. Based on the numbers derived above and using the average of the 1977 and 1984 levels, of the 11.1 percentage point drop in unionization, 6.3 points are due to a decline in demand and 4.8 points are due to a decline in supply relative to demand. Thus, both factors have been very important.

This analysis, which is essentially a comparison of means, relies heavily on the comparability of the QES and the AFL sampling designs. It is clear from table 2 that there are some differences in the means of the labor force structure measures between the two samples that are not likely to be the result of changes in labor force structure over the seven year period between the surveys. The next step is to estimate multivariate discrete choice models that can account for observable differences in the relevant probabilities. This will also shed light on the extent to which the declines in these various measures can be accounted for by the standard explanations of shifts in the demographic, occupational, and industrial composition of the labor force.

Before turning to estimation of the discrete choice models specified in section II, it is necessary to specify a probit estimator that can account for the choice-based nature of the AFL data.

#### IV. The Choice-Based Sample Probit Model

Following Hausman and Wise (1981), consider a random variable  $y$  with density function  $f(y)$ . Assume that  $y$  is sampled with probability  $p_1$  if  $y$  is less than zero and that  $y$  is sampled with probability  $p_2$  if  $y$  is greater than or equal to zero. In this case the distribution of  $y$  in the resulting sample is

$$(IV.1) \quad h(y) = \frac{p_1 f(y)}{p_1 \int_{-\infty}^0 f(\omega) d\omega + p_2 \int_0^{\infty} f(\omega) d\omega} \quad \text{for } y < 0.$$

and

$$(IV.2) \quad h(y) = \frac{p_2 f(y)}{p_1 \int_{-\infty}^0 f(\omega) d\omega + p_2 \int_0^{\infty} f(\omega) d\omega} \quad \text{for } y \geq 0.$$

Note that this is essentially a variable weighting procedure.

Consider first estimating the simple probit model of union status outlined in equations II.1 and II.2. Workers are undersampled if they are both unionized and from the AFL sample. In this context,  $P_1=1$  for all observations, and, based on the evidence presented earlier in this section,

$$(IV.3) \quad P_{2i} = (1 - AFL_i) + AFL_i * 0.9$$

for observation  $i$ , where  $AFL_i$  is a dummy variable that equals 1 if the observation is from the AFL sample and equals 0 if the observation is from the QES sample. The choice-based density function in equations IV.1 and IV.2 reduce to  $f(y)$  for the QES sample because both  $P_1$  and  $P_2$  equal one for these observations.

Given the standard normal distribution of the errors and the choice based nature of the sample, the probability that a worker is unionized is

$$(IV.4) \quad \Pr(U_i=1) = \frac{P_{2i} \Phi(X_i \beta)}{[1 - \Phi(X_i \beta)] + P_{2i} \Phi(X_i \beta)},$$

where  $P_{2i}$  is defined in equation IV.3. Similarly, the probability that a worker is not unionized is  $1 - \Pr(U_i=1)$  which is

$$(IV.5) \quad \Pr(U_i=0) = \frac{1 - \Phi(X_i \beta)}{[1 - \Phi(X_i \beta)] + P_{2i} \Phi(X_i \beta)},$$

and the log-likelihood function can be formed in a straightforward manner from these probabilities.

The model of demand for union representation is specified in a similar fashion. However, only the union workers from the AFL sample are undersampled. The nonunion workers from the AFL sample and all workers from the QES sample are appropriately represented. In this case,

$$(IV.6) \quad P_{2i} = (1 - AFL_i) + AFL_i * (1 - U_i) + AFL_i * U_i * 0.9,$$

so that the sampling rate equals one for all but the union observations from the AFL sample. The probability that a worker demands union representation is

$$(IV.7) \quad \Pr(D_i=1) = \frac{P_{2i} \Phi(X_i \beta_1)}{[1 - \Phi(X_i \beta_1)] + P_{2i} \Phi(X_i \beta_1)},$$

where  $D_i=1$  if the worker either is unionized or is nonunion and responds affirmatively to the VFU question and  $D_i=0$  if the worker is nonunion and responds negatively to the VFU question.  $\Pr(D_i=0)$  is simply  $1 - \Pr(D_i=1)$ , and the log-likelihood function is derived straightforwardly.

The model of demand for union representation among nonunion workers is the same model as for the demand for union representation overall. However, there are obviously no union workers so there is no choice-based sampling problem and the probability in equation (IV.7) reduces to a simple probit specification.

The model of the supply of union jobs relative to demand is specified identically to the model of the probability of unionization except that it is

estimated only over the subsample of workers who demand a union job ( $D_i=1$ ). The probability that a worker who demands union representation is actually unionized is

$$(IV.8) \quad \Pr(U_i=1|D_i=1) = \frac{P_{2i} \Phi(X_i \beta_2)}{[1 - \Phi(X_i \beta_2)] + P_{2i} \Phi(X_i \beta_2)},$$

and  $P_{2i}$  is as defined in equation (IV.3). The  $\Pr(U_i=0|D_i=1)$  is simply  $1 - \Pr(U_i=1|D_i=1)$ , and the log-likelihood function is derived from these probabilities in a straightforward fashion.

#### V. The Decline in the Fraction Unionized

Before investigating the demand for and relative supply of union jobs, it is worth investigating the change in the fraction unionized between 1977 and 1984. Table 4 contains estimates of the choice-based sample probit model of the probability that a worker is unionized discussed in section IV. This model does not have a structural interpretation, but it is useful as a summary of the data. The model in the first column includes only a constant and the AFL dummy variable. The estimated coefficient on the AFL dummy is significantly less than zero, suggesting that that probability of unionization was lower in 1984. The model in the second column includes an additional nineteen dummy variables (defined in table 2) that control for various dimensions of labor force structure (sex, race, age, region, industry, and occupation). These labor force structure variables clearly are significantly related to the probability of unionization based on a likelihood ratio test.<sup>5</sup> The coefficient of the AFL dummy variable in the model that includes the labor force structure variables is still significantly negative and of approximately the same magnitude as in the basic model.

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<sup>5</sup>The likelihood ratio test statistic is 302.8 (p-value < .0001) which is distributed as  $\chi^2$  with 19 degrees of freedom.

TABLE 4

Choice-Based Probit Model of Probability of Unionization  
Selected Parameters

Variable	(1)	(2)
Constant	-.4417 (.0428)	
AFL	-.3373 (.0614)	-.3578 (.0692)
Labor Force Struc.	NO	YES
Log-Likelihood n = 2002	-1125.3	-973.9
Mean Probability assuming all:		
1977	.329 (.0155)	.322 (.0143)
1984	.218 (.0129)	.221 (.0126)
Difference	-.114 (.0202)	-.102 (.0195)

Note: Labor Force Structure includes a set of 19 variables for sex, race, age, education, industry, and occupation. The numbers in parentheses are asymptotic standard errors. The 1977 mean probability is computed using the actual values of the labor force structure variables for the combined sample assuming  $AFL_i = 0$  for all observations. The 1984 mean probability is computed using the actual values of the labor force structure variables for the combined sample assuming  $AFL_i = 1$  for all observations.

While the results are not presented here, the model was reestimated allowing labor force structure to have different effects on the probability of unionization in the two years. A separate probit model was estimated for each year (choice-based for 1984). On the basis of these results, it is not possible to reject the hypothesis that the parameters of the labor force structure variables are the same in 1977 and 1984 against the model with a single set of labor force structure variables plus an intercept shift for 1984.<sup>6</sup>

Given the nonlinearity of the probit model, the negative estimated coefficient for the AFL variable does not imply an invariant relationship with the probability of unionization. In order to interpret the results correctly, the lower half of table 4 contains mean predicted probabilities of unionization for the entire sample under two assumptions. First it is assumed that it is 1977 for all workers ( $AFL_i = 0 \forall i$ ). This mean probability is computed as

$$(V.1) \quad \hat{P}_{77} = \frac{1}{N} \cdot \sum_{i=0}^N \Phi(X_{i77} \hat{\beta}) ,$$

where  $\hat{\beta}$  is the vector of estimated parameters and  $X_{i77}$  is the vector of labor force structure variables with  $AFL_i$  forced to zero for all observations.

Next, it is assumed that it is 1984 for all workers ( $AFL_i = 1 \forall i$ ). This mean probability is computed in a similar fashion as

$$(V.2) \quad \hat{P}_{84} = \frac{1}{N} \cdot \sum_{i=0}^N \Phi(X_{i84} \hat{\beta}) ,$$

where  $X_{i84}$  is the vector of labor force structure variables with  $AFL_i$  forced to one for all observations. The difference in these mean probabilities is

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<sup>6</sup>The likelihood ratio test statistic is 17.0 (p-value = .52) which is distributed as  $\chi^2$  with 18 degrees of freedom. There are nineteen labor force structure variables, but there were no union workers in the finance, insurance and real estate industry category so that its coefficient could not be estimated for 1984. The result is 18 degrees of freedom for the test.

reported as well. The reported asymptotic standard errors are computed as first order approximations to the nonlinear function of random variables.

The estimates in the first column of table 4 confirm a statistically significant 11.4 percentage point drop in the mean probability of unionization between 1977 and 1984. The key finding is that, even after controlling for labor force structure, the mean probability of unionization is fully 10.2 percentage points lower in 1984 than in 1977.

The conclusions are 1) that the raw difference between 1977 and 1984 in the probability of unionization is not an artifact of different sample designs and 2) that changes in labor force structure can account for very little of the overall decline in unionization over the past decade. This contrasts with evidence from the 1950-1980 period (Farber, 1985; Dickens and Leonard, 1985) which suggests that as much as half of the decline in unionization over that period can be accounted for by structural shifts in the labor force. The explanation for the recent decline must lie elsewhere.

## VI. The Decline in Demand for Unionization

Table 5 contains estimates of the choice-based probit model of the probability that a worker demands union representation. This analysis is identical to the analysis of the probability of union membership in the previous section except that the dependent dichotomous variable equals one not only for union members but also for nonunion workers who would vote for union representation.

The model in the first column of table 5 includes only a constant and the AFL dummy variable. The estimated coefficient on the AFL dummy is significantly less than zero, reflecting the fact that the demand for union representation was lower in 1984 than in 1977. The model in the second column includes the nineteen labor force structure dummy variables. Based on a likelihood ratio test, these labor force structure variables clearly are

TABLE 5

Choice-Based Probit Model of Demand for Unionization  
Selected Parameters

Variable	(1)	(2)
Constant	.2393 (.0418)	
AFL	-.3287 (.0563)	-.2993 (.0606)
Labor Force Struc.	NO	YES
Log-Likelihood n = 2002	-1380.1	-1273.5
Mean Probability assuming all:		
1977	.594 (.0162)	.582 (.0159)
1984	.465 (.0150)	.473 (.0147)
Difference	-.130 (.0221)	-.109 (.0222)

Note: Labor Force Structure includes a set of 19 variables for sex, race, age, education, industry, and occupation. The numbers in parentheses are asymptotic standard errors. The 1977 mean probability is computed using the actual values of the labor force structure variables for the combined sample assuming  $AFL_i = 0$  for all observations. The 1984 mean probability is computed using the actual values of the labor force structure variables for the combined sample assuming  $AFL_i = 1$  for all observations.

significantly related to the probability that a worker demands union representation.<sup>7</sup>

While the results are not presented here, the model was reestimated allowing labor force structure to have different effects in the two years on the probability of that a worker demands union representation. A separate probit model was estimated for each year (choice-based for 1984). The hypothesis that the parameters of the labor force structure variables are the same in 1977 and 1984 can be rejected at the 5% level but not the 1% level of significance against the model with a single set of labor force structure variables plus an intercept shift for 1984.<sup>8</sup>

In order to interpret the results quantitatively, the lower half of table 5 contains mean predicted probabilities of the demand for union representation for both 1977 and 1984. These probabilities are defined in the same manner as the mean predicted probabilities of union membership computed in the previous section. The estimates in the first column confirm a statistically significant 13.0 percentage point drop between 1977 and 1984 in the mean probability that a worker demands union representation. Once again, the key finding is that, even after controlling for labor force structure, the mean probability that a worker demands union representation is fully 10.9 percentage points lower in 1984 than in 1977.

The conclusions, consistent with the analysis in the previous section, are 1) that changes in labor force structure can account for very little of the overall decline in the demand for union representation over the past decade and 2) that the difference between 1977 and 1984 in the demand for

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<sup>7</sup>The likelihood ratio test statistic is 213.2 (p-value < .0001) which is distributed as  $\chi^2$  with 19 degrees of freedom.

<sup>8</sup>The likelihood ratio test statistic is 33.0 (p-value = .024) which is distributed as  $\chi^2$  with 19 degrees of freedom.

union representation is not an artifact of differences in sample design between the QES and the AFL survey.

#### VII. The Decline in Relative Supply of Unionization

Table 6 contains estimates of the choice-based probit model of the probability that a worker who demands union representation is, in fact, unionized. This analysis is identical to the the analysis of the probability of union membership in section V except that the model is estimated over the sub-sample of only those workers who either are union members or are nonunion but would vote affirmatively for union representation.

The model in the first column of table 6 includes only a constant and the AFL dummy variable. The estimated coefficient on the AFL dummy is significantly less than zero, reflecting the fact that that the supply of union jobs relative to demand was lower in 1984 than in 1977. The model in the second column includes the nineteen labor force structure dummy variables. Based on a likelihood ratio test, these labor force structure variables clearly are significantly related to the probability of that a worker who wants a union job is actually unionized.<sup>9</sup>

While the results are not presented here, the model was reestimated allowing labor force structure to have different effects on the probability of unionization in the two years. A separate probit model was estimated for each year (choice-based for 1984), and it is not possible to reject the hypothesis

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<sup>9</sup>The likelihood ratio test statistic is 230.6 (p-value < .0001) which is distributed as  $\chi^2$  with 19 degrees of freedom.

TABLE 6

Choice-Based Probit Model of Relative Supply of Unionization  
Selected Parameters

Variable	(1)	(2)
Constant	.1352 (.0538)	
AFL	-.2291 (.0781)	-.2620 (.0610)
Labor Force Struc.	NO	YES
Log-Likelihood n = 1044	-716.5	-601.2
Mean Probability assuming all:		
1977	.554 (.0213)	.550 (.0194)
1984	.463 (.0225)	.463 (.0212)
Difference	-.0912 (.0309)	-.0865 (.0295)

Note: Labor Force Structure includes a set of 19 variables for sex, race, age, education, industry, and occupation. The numbers in parentheses are asymptotic standard errors. The 1977 mean probability is computed using the actual values of the labor force structure variables for the combined sample assuming  $AFL_i = 0$  for all observations. The 1984 mean probability is computed using the actual values of the labor force structure variables for the combined sample assuming  $AFL_i = 1$  for all observations.

that the parameters of the labor force structure variables are the same in 1977 and 1984.<sup>10</sup>

In order to interpret the results quantitatively, the lower half of table 6 contains mean predicted probabilities for both 1977 and 1984 that a worker is unionized conditional on demanding union representation. These probabilities are defined in the same manner as the mean predicted probabilities computed in the previous two sections. The estimates in the first column confirm a statistically significant 9.1 percentage point drop between 1977 and 1984 in the mean probability that a worker who demands union representation is actually unionized. As before, the key finding is that, even after controlling for labor force structure, the mean probability that a worker is unionized conditional on demanding union representation is still substantially lower (8.7 percentage points) in 1984 than in 1977.

The conclusions, consistent with the analyses in the previous two sections, are 1) that changes in labor force structure can account for very little of the overall decline over the past decade in the supply of union jobs relative to demand and 2) that the raw difference between 1977 and 1984 in the relative supply of union jobs is not simply an artifact of sample design differences.

#### VIII. Increased Employer Resistance as an Explanation for the Decline in Unionization

The evidence presented to this point clearly shows that insubstantial fractions of the declines in the probability of unionization, the demand for

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<sup>10</sup>The likelihood ratio test statistic is 10.4 (p-value = .918) which is distributed as  $\chi^2$  with 18 degrees of freedom. There are nineteen labor force structure variables, but there were no union workers in the finance, insurance and real estate industry category so that its coefficient could not be estimated for 1984. The result is 18 degrees of freedom for the test.

union representation, and the relative supply of union jobs can be accounted for by shifts in the structure of the labor force. This is consistent with the view that the decline is associated with an increase in employer resistance to unionization (Freeman, 1985). The key direct evidence for this increased resistance is the dramatic decrease in the quantity of union organizing activity and success over the last decade coupled with the equally dramatic increase over the last decade in representation election related unfair labor practice charges filed by unions against employers.

The form of increased employer resistance ranges from outright hostility to unions to the improvement of wages and/or working conditions so that workers don't feel they need union. One key tactic is to hire labor-management consultants whose hallmark is defeating unions in representation elections. Freeman (1985) outlines three approaches that these consultants take. First, they can emphasize "positive labor relations" by which it is meant having the nonunion employer provide a union-like environment including higher wages, better fringe benefits, workplace due-process, etc. Second, they can conduct a very active but legal campaign that includes much communication with workers regarding their views of what unionization will mean, gerrymandering of the unit of representation, and delay of the election itself. Finally, they can conduct an illegal election campaign by committing obvious unfair labor practices. There is evidence from data on individual votes in actual NLRB elections that very active legal campaigns and illegal campaigns have a significant influence on the outcomes of representation elections (Dickens, 1983). In addition, there is evidence that simply delaying the election significantly reduces the probability of union success in representation elections (Roomkin and Block, 1981).

Table 7 contains data on trends in union organizing activity. The first column of the table contains the percentage of nonunion workers who were eligible to vote in National Labor Relations Board (NLRB) supervised

Table 7:  
Union Election Activity and Employer Unfair Labor Practices  
Selected Years (1970 - 1984)

YEAR	% Nonunion Workers in elections	% Elections Won by Union	Unfair Labor Practices per election
1970	1.15	55.2	2.61
1975	0.97	48.3	3.64
1977	0.87	46.0	3.99
1978	0.67	46.0	4.81
1979	0.80	45.1	5.13
1980	0.71	45.7	5.37
1981	0.60	43.1	5.77
1982	0.40	40.3	7.45
1983	0.27	43.0	--

Sources: Election and unfair labor practice data from various issues National Labor Relations Board *Annual Report* (U. S. Government Printing Office, Washington, D. C. Nonunion employment derived from employment data from U. S. Bureau of Labor Statistics *Handbook of Labor Economics* (Bulletin 2070, U.S. Government Printing Office, Washington), December 1980 and membership based data from L. Troy and N. Sheflin, *Union Sourcebook* (Industrial Relations Data Information Services, West Orange, New Jersey, 1985).

representation elections. Eligible workers are those who worked in potential bargaining units where elections were held. This percentage fell from 1.15% in 1970 to 0.27% in 1983, the last year for which data are available. This measures the decline in the quantity of organizing activity undertaken, and it may reflect increased employer resistance to union organizing for two reasons. First, to the extent that increased employer resistance takes the form of outright hostility to union organizing efforts, unions and workers will perceive a lower probability of success in organizing efforts. The result is that fewer elections will be undertaken, and the supply of union jobs relative to demand (as measured in this study) will be reduced. Second, to the extent that employer resistance takes the form of improved wages and working conditions and "positive labor relations", the measured demand for union representation will be lower and there will be less election activity.

The second column of table 7 contains data on union success in the elections that they do undertake as measured by the percentage of elections undertaken that are won by unions. This percentage fell from 55.2% in 1970 to 43.0% in 1983. This is likely to reflect the increased sophistication of employer responses to explicit organizing efforts and to result in a reduction in the relative supply of union jobs. That employers are responding more aggressively to union organizing efforts is clear from the data contained in the third column of table 7 which show that the number of employer unfair labor practice charges per election rose from 2.61 in 1970 to 7.45 in 1982.

These unfair labor practices are a set of activities of employers that are proscribed under the National Labor Relations Act because they are felt to interfere with employees' rights to make a free decision regarding collective organization. Examples are threats, harassment, firing, and unduly pessimistic claims of what will result from unionization. This resistance makes it more difficult for unions to organize for any given level of demand, and unions and workers will be less willing to undertake organization efforts.

This can account for at least part of the decline in both the quantity of election activity and union success with election activity documented in table 7.

The reasons for this increased employer resistance to unionization are not clear. It may be that new and more effective tactics to resist union organization have been invented in a manner analogous to technological advancement in any production process. In particular, it has been argued casually that the advent of labor-management consultants is just this sort of event. However, it is more likely that the costs of unionization to firms have increased. This would provide firms with an incentive to resist unionization more strenuously than in the past both by utilizing existing techniques for remaining nonunion and by "inventing" new and more effective techniques. Viewed in this context, the increased use of labor-management consultants is demand driven, and the discussion of increased employer opposition must start with a discussion of how the economic environment has changed with regard to the ability of unionized firms to compete successfully.

The most obvious change in the U. S. economy over the past decade is the increased level of foreign competition, particularly in the manufacturing sector that has formed the heart of the union movement in the United States. Some newly tabulated data on import penetration illustrate this graphically.<sup>11</sup> In 1958 only 2.5% of manufacturing sales in the U. S. were imports. This rose to 7.2% by 1977 and to 11.0% by 1984.

To the extent that unions raise production costs, some of this increase in imports is likely to be due to the unions themselves. However, it is also likely that other countries have rapidly developed industrial capacity that rivals (and in some cases even surpasses) our own for reasons unrelated to

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<sup>11</sup>See Abowd (1987) for a description of these data.

unionization in the United States. In any case, in the past, with no significant foreign competition, it may be that American firms could afford to accommodate higher costs associated with labor unions by sharing some of the gains of a relatively closed economy with their workers. However, the increased openness of the American economy may make it prohibitively expensive to bear these higher costs because higher product prices will not be borne by consumers who have attractive foreign alternatives.

Another structural change in the U. S. economy is the deregulation of some key heavily unionized industries such as trucking and airlines. These industries have become much more competitive since the government removed entry barriers and rate regulation.<sup>12</sup> In this more competitive environment firms may resist unionization more strenuously than in the past because their market position is no longer protected by the government.

Some recent evidence, developed by Abowd and Farber (1987), on the relationship between the decline in union organizing activity and product market competition in U. S. Manufacturing is mixed. They argue that changes in product market competition, as reflected in changes in the total quantity of quasi-rents available to be divided between the union and the employer, is an important determinant of the quantity of union organizing activity. As expected, they find that union organizing activity is positively related to the change in the total quantity of quasi-rents but that there is still a substantial negative time trend to organizing activity that is not explained by changes in product market competition. In addition, they are unable to find any relationship between changes in import penetration and union organizing activity. However, Cone (1987) finds that there is a positive

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<sup>12</sup>See Rose (1985, 1987) for analyses of the the relationships among regulation, market power, and unions in the trucking industry. The problems of both the firms and the unions in the airline industry are common knowledge.

relationship between changes in import penetration and employer unfair labor practices.

Overall, increased employer resistance may account for some of the decline in the demand for and relative supply of unionization. However, the reasons for increased employer resistance are not well understood. An important missing piece of the puzzle is a full understanding of the decline in the demand for union representation among nonunion workers documented in the last column of table 3. While this may be due in part to increased employer resistance, particularly of the "positive labor relations" variety, it may also be due to changing economic circumstances and attitudes among the nonunion workforce. This is the focus of the next two sections.

#### IX. The Decline in the Demand for Unionization among Nonunion Workers:

##### Is it Explained by Shifts in Labor Force Structure?

The decline in demand for unionization among *nonunion* workers is an important contributor to the overall decline in the demand for unionization. Evidence was presented earlier that the fraction of nonunion workers who desired union representation fell from 39.5% to 32.4% between 1977 and 1984. Further evidence of the long run decline in demand for union representation comes from the data on NLRB supervised representation elections discussed in the previous section and contained in table 7.

The possibility that the decline in the demand for unionization among nonunion workers can be fully accounted for by structural shifts in the labor force can be dismissed easily. Estimates of a simple probit model of the VFU measure over the sample of nonunion workers including a constant and a dummy variable for the AFL survey are contained in the first column of table 8.<sup>13</sup>

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<sup>13</sup>Note that the undersampling of unionized workers in the AFL survey does not affect this analysis because it deals strictly with nonunion workers.

TABLE 8

Probit Model of Demand for Unionization by Nonunion Workers  
Selected Parameters

Variable	(1)	(2)	(3)
Constant	-.2651 (.0511)		
AFL	-.1923 (.0676)	-.1453 (.0729)	-.0105 (.0783)
SAT			-.6794 (.1181)
SATPAY			-.4218 (.0805)
SATSEC			-.2949 (.0926)
UIMPPAY			.5899 (.1045)
Labor Force Struc.	NO	YES	YES
Log-Likelihood n = 1482	-958.8	-887.7	-813.7
Mean Probability assuming all:			
1977	.395 (.0197)	.382 (.0186)	.351 (.0176)
1984	.324 (.0159)	.332 (.0158)	.354 (.0156)
Difference	-.0718 (.0253)	-.0498 (.0251)	.00325 (.0243)

Note: Labor Force Structure includes a set of 19 variables for sex, race, age, education, industry, and occupation. The numbers in parentheses are asymptotic standard errors. The 1977 mean probability is computed using the actual values of the labor force structure variables for the combined sample assuming  $AFL_i = 0$  for all observations. The 1984 mean probability is computed using the actual values of the labor force structure variables for the combined sample assuming  $AFL_i = 1$  for all observations.

The bottom panel of the table contains mean predicted probabilities that a nonunion worker demands union representation first assuming that all 1482 workers are in 1977 and then assuming that all 1482 workers are in 1984.<sup>14</sup> These results verify that the demand for union representation among nonunion workers fell from 39.5% in 1977 to 32.4% in 1984 for a drop of 7.1 percentage points.

Estimates of the probit model containing the 19 labor structure variables are contained in the second column of table 8. Based on a likelihood ratio test, these labor force structure variables clearly are significantly related to the probability of that a nonunion worker demands union representation.<sup>15</sup> The coefficient of the AFL dummy variable is still significantly negative at conventional levels. The mean predicted probabilities reported in the bottom panel of the table suggest that the demand for union representation was a statistically significant 5.0 percentage points lower in 1984 than in 1977. Thus, structural shifts can account for about thirty percent of the decline in demand for union representation among nonunion workers.

While the results are not presented here, the model was reestimated allowing labor force structure to have different effects on the probability that a nonunion worker demand union representation in the two years. A separate probit model was estimated for each year, and it is not possible to

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<sup>14</sup>These mean predicted probabilities are defined in the same manner as those in sections V, VI, and VII.

<sup>15</sup>The likelihood ratio test statistic is 142.2 (p-value < .0001) which is distributed as  $\chi^2$  with 19 degrees of freedom.

reject the hypothesis at conventional levels that the parameters of the labor force structure variables are the same in 1977 and 1984.<sup>16</sup>

#### X. Job Satisfaction, Union Instrumentality, and the Decline in Demand

An important theme in an earlier literature on the demand for union representation is that workers join unions in order both to improve their wages and to protect themselves from what they feel is arbitrary treatment by their supervisors (Rees, 1962). Seidman, Karsh, and London (1951), in their important study of "Why Workers Join Unions" argue (p.77)

" . . . that personal experiences in the plant play a large part in the thinking of workers, and that an unpleasant personal experience becomes a powerful motivation that turns workers toward a union . . . ."

Following these arguments, Farber and Saks (1980) investigate the role that a worker's satisfaction with his/her job and a worker's perceptions of the ability of unions to address problems on the job play in determining a worker's vote in a representation election. They find strong support for the view that workers are more likely to vote for union representation when they are dissatisfied and feel that unions can improve conditions in the relevant dimension.

These considerations are relevant for the analysis of the decline in the demand for union representation among nonunion workers. By working with a sample of strictly nonunion workers it is appropriate to investigate the role of subjective variables, specifically measures of job satisfaction and worker attitudes toward unions in general, that may play a key role in determining the demand for union representation. It would not be appropriate to analyze these variables across union and nonunion jobs because they would play very

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<sup>16</sup>The likelihood ratio test statistic is 25.8 (p-value = .136) which is distributed as  $\chi^2$  with 19 degrees of freedom.

different roles. For example, we would expect that nonunion workers who were dissatisfied with their job to be more likely to demand union representation. At the same time, union members who were dissatisfied with their job would be less favorably disposed toward union representation.

It is fortunate that the QES and the AFL survey have comparable measures of job satisfaction in two key dimensions (pay and job security) as well as overall job satisfaction. The three measures of satisfaction were developed using a four value response scale. These were recoded to two values (1 = satisfied, 0 = not satisfied).<sup>17</sup> The two surveys also have comparable measures of worker perceptions of the ability of unions in the abstract to improve wages and working conditions (union instrumentality). This was also recoded from a four value response scale to two values (1= unions improve wages and working conditions, 0 = unions do not).<sup>18</sup> In both surveys, the questions referred to are worded virtually identically, and the allowed responses are scaled alike. While there may be problems due to the fact that the two surveys are different in overall structure, the properties of the samples are similar enough and the particular questions are similar enough to proceed with a comparison with some confidence.

The first part of table 9 contains information on the fraction of the workers in the QES and AFL samples that reported satisfaction in each of the three dimensions. It is clear from this table that both union and nonunion workers reported very high levels of overall satisfaction with their jobs in 1977 and 1984. Union workers' satisfaction fell slightly between 1977 and

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<sup>17</sup> The four possible responses to these questions (How satisfied are you with . . . ?) were 1) very satisfied, 2) somewhat satisfied, 3) somewhat dissatisfied, and 4) very dissatisfied.

<sup>18</sup> This question was "Tell me if you 1) agree strongly, 2) agree somewhat, 3) disagree somewhat, or 4) disagree strongly that unions improve the wages and working conditions of workers."

TABLE 9  
Job Satisfaction and Union Instrumentality

	Members		Nonmembers	
	1977	1984	1977	1984
<hr/>				
Fraction of workers reporting satisfaction with:				
Overall (SAT)	.885	.853	.875	.895
Pay (SATPAY)	.743	.770	.584	.745
Job security (SATSEC)	.766	.783	.736	.850
Fraction of workers reporting that:				
Unions improve wages (UIMPPAY)	.888	.917	.857	.757
<hr/>				
n	303	217	617	865

1984 while nonunion workers' satisfaction rose slightly. Union workers report slightly lower levels of satisfaction in 1977 with the specific aspects of their jobs reported on in table 3, but these levels rose slightly by 1984. A substantially different picture emerges from analysis of the satisfaction of nonunion workers with specific aspects of their jobs. Aside from the relatively low reported satisfaction with pay in 1977, the most striking result is that reported levels of satisfaction with pay and job security among nonunion workers rose dramatically between 1977 and 1984. This suggests that at least part of the decline in the demand for unionization may be due to less dissatisfaction on the part of nonunion workers.

The reasons for this increase in perceived job satisfaction are not clear. Satisfaction with pay may reflect how workers evaluate their pay relative to either their best alternatives or to some norm that they consider equitable. Given the well known decline in real earnings since the mid-1970's, the general increase in worker satisfaction with pay then suggests that the standards against which workers judge their wages fell. In other words the period from 1977 through 1984 is marked by declining expectations, and this may be a cause of the decrease in demand for union representation.

It may also be that the increased reported satisfaction is the result of cognitive dissonance by workers. This argument runs that the chances of workers improving their current situation have deteriorated since 1977 and that workers protect themselves psychologically by convincing themselves that they are satisfied with the current situation. In other words, it is unhealthy for an individual to be unhappy about a situation over which he/she has no control so a natural defense is to convince oneself that he/she is *not* unhappy.

It is tempting to argue that the measured increase in satisfaction among nonunion workers is a statistical artifact due to the fact that the satisfaction measures were derived from quite different surveys in different

environments. However, the contrast between the union and nonunion fractions in table 9 belie this argument. If there were a systematic bias in the responses, say toward more satisfaction in the AFL survey, we would expect this to show up in the union responses as well as the nonunion responses. The fact that it does not is strong evidence that there has been a "real" change.

With regard to union instrumentality, the numbers in the second part of table 9 suggest that, while most nonunion workers still believe that unions improve the wages and working conditions of workers, the fraction of nonunion workers who believe that unions are effective in this dimension fell substantially from 1977 to 1984. Thus, nonunion workers are less likely to believe that unions can help with a central area of concern on the job, and this too may be a cause of the decline in demand for union representation. Over the same period of time, the fraction of union workers who reported that they believe that unions improve wages and working conditions actually increased slightly.

It remains to demonstrate the links between worker preferences for union representation and these subjective measures of job satisfaction and union instrumentality. The third column of table 8 contains estimates of a simple probit model of the demand for union representation among nonunion workers that includes the four subjective variables along with the set of controls for labor force structure. All of the satisfaction measures have a statistically significant effect ( $p$ -values  $< .001$ ) in the hypothesized direction on nonunion workers' preferences for union representation. Workers who are satisfied with their job are significantly less likely to demand union representation. The single measure of union instrumentality also performs as expected. Workers who feel that unions improve pay and working conditions are significantly more likely to desire union representation than workers who do not feel that unions are instrumental in this dimension.

While the results are not presented here, the model was reestimated allowing the labor force structure, job satisfaction, and union instrumentality variables to have different effects on the probability that a nonunion worker demand union representation in the two years. A separate probit model was estimated for each year, and it is not possible to reject the hypothesis at conventional levels that the parameters of the labor force structure variables are the same in 1977 and 1984.<sup>19</sup>

To get a feel for the magnitude of the effects of job satisfaction on the demand for union representation, table 10 contains mean predicted probabilities over the entire sample of 1482 nonunion workers assuming particular configurations of the satisfaction variables for all workers. These are based on the estimates in column 3 of table 8, and the magnitudes are impressive. If it is assumed that all workers are not satisfied with their job overall (SAT=0), the mean probability that a nonunion worker demands union representation is fully 23 percentage points higher (s.e. = 4.1) than in the case where it is assumed that all workers are satisfied with their job (SAT=1). The difference is somewhat smaller, though still quite large for the other two measures of satisfaction. If it is assumed that all workers are not satisfied in any of the dimensions, the mean probability that a worker demands union representation is a dramatic 47.4 percentage points higher (s.e. = 4.2) than in the case where all workers are satisfied in all three dimensions.

Table 10 also contains mean predicted probabilities assuming particular configurations of the union instrumentality variable. It is clear that worker perceptions of union instrumentality are quite important. If all workers are assumed to feel that unions improve wages and working conditions, the mean

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<sup>19</sup>The likelihood ratio test statistic is 26.0 (p-value = .301) which is distributed as  $\chi^2$  with 23 degrees of freedom.

TABLE 10

Mean Predicted Probability of Demand for Union Representation<sup>a</sup>  
Nonunion Workers

Mean Probability assuming all:	=0	=1	DIFF
SAT	.556 (.0386)	.327 (.0122)	-.230 (.0410)
SATPAY	.445 (.0221)	.307 (.0143)	-.139 (.0273)
SATSEC	.429 (.0276)	.334 (.0129)	-.0956 (.0310)
SAT, SATPAY, & SATSEC	.734 (.0360)	.261 (.0142)	-.474 (.0418)
NOT UIMPPAY <sup>b</sup>	.386 (.0130)	.214 (.0238)	-.172 (.0272)
SAT, SATPAY, SATSEC, & NOT UIMPPAY	.775 (.0342)	.138 (.0208)	-.637 (.0442)

## Notes:

<sup>a</sup>

All predicted probabilities computed using the estimates in column 3 of table 8 and the sample of 1482 nonunion workers. The actual values of all of the variables except those manipulated in the table are used. The numbers in parentheses are asymptotic standard errors.

<sup>b</sup>

NOT UIMPPAY = 1 - UIMPPAY. This is used so that the variable has a relationship with the demand for union representation that is of the same sign as the relationships of the satisfaction measures.

probability that a worker demands union representation is 17.2 percentage points higher (s.e. = 2.7) than in the case where no workers feel that unions improve wages and working conditions. This works quite powerfully in conjunction with the satisfaction measures. In the extreme case, where all workers feel that unions improve wages and working conditions and where all workers are not satisfied in any of the three dimensions, the mean probability that a worker demands union representation is 63.7 percentage points higher (s.e. = 4.4) than in the case where no workers feel that unions improve wages and working conditions and all workers are satisfied with their jobs in each of the three dimensions.

The conclusion from the analysis in table 10 is that job satisfaction and perceptions of union instrumentality are very important factors in individual worker demand for union representation. The magnitude of the effects of these variables dwarfs the decline in demand between 1977 and 1984 summarized in table 8. This lends strong support to the views, expressed in the earlier literature and cited earlier in this section, that a central force motivating workers to demand union representation is "unpleasant personal experience" in Seidman, Karsh, and London's (1951) terms.

With regard to the decline in the demand for unionization between 1977 and 1984, it is clear from the estimates in the third column of table 8, that the coefficient of the AFL dummy variable is not significantly different from zero at any reasonable level after controlling for the satisfaction and instrumentality variables. The mean predicted probabilities in the third column of table 8 verify that the probability that a nonunion worker demands union representation is no lower in 1984 than in 1977 after controlling for the satisfaction and instrumentality variables.

Although the results are not presented here, the probit model in the third column of table 8 was reestimated using various subsets of the satisfaction and instrumentality variables in order to gain some insight into

which variable accounts for the disappearance of the decline between 1977 and 1984. No clear answer emerges. Including any one of the four subjective variables reduces the effect noted in column 2 of table 8. The difference in predicted mean probabilities is still negative but generally insignificantly different from zero. Inclusion of overall satisfaction (SAT) has the smallest effect on the 1984-1977 difference, while inclusion of any one of the other three measures (SATPAY, SATSEC, or UIMPPAY) has a large effect on the difference.

Overall, the decline in demand for union representation by nonunion workers is fully accounted for by measures of job satisfaction and worker perceptions of union instrumentality. Nonunion workers who are dissatisfied with various aspects of their job and/or who perceive that unions improve wages and working conditions are more likely to demand union representation. However, for reasons that are not well understood workers are reporting higher levels of satisfaction in 1984 than in 1977 along with less expectation that unions are instrumental in improving jobs.

#### XI. Concluding Remarks

The dramatic decline since the mid-1970's in the fraction of the labor force that is unionized is a phenomenon that is not yet fully understood. Indirect evidence was presented here which showed that employer resistance to unionization has increased and that, as a result, the ability of workers who desire union jobs to find such jobs has decreased. This is formalized as a decline in the supply of union jobs relative to demand. Evidence was also presented that the demand for union representation among nonunion workers has declined substantially since the mid-1970's. It was found that very little of the declines in these quantities can be accounted for by changes in the structure of the labor force.

One strong result that was found is that the decline in demand for

unionization can be *fully* accounted for by an increase in the satisfaction of nonunion workers with their jobs and a decrease in their belief that unions are instrumental in improving wages and working conditions of workers in general. However, the rationale for this is not obvious. Objectively, nonunion workers were no better off in 1984 than they were in 1977, but satisfaction levels increased. It may be that the economic dislocations of the 1970's and the increased competitiveness of the economy have reduced workers' expectations.

The most obvious unresolved issue is exactly why employer resistance to unionization has increased so dramatically. One obvious answer is the increased competitiveness of U. S. markets, both in markets for traded goods and in previously regulated domestic markets. In this more competitive environment firms may feel that they must be more cost conscious than they needed to be twenty years ago if they are to thrive. Recent work by Abowd and Farber (1987) partially supports this view. A related unresolved issue is the extent to which the increased international competitiveness is due to union policies that raise employment costs.

Another answer to the question of increased employer resistance is that the political and social climate may have changed so that the role that unions have played in American society and the economy is being called into serious question for the first time since that role was defined in the 1930's. Some recent work completed at M.I.T. (Kochan, Katz, and McKersie, 1986) suggests the following scenario. Employers have never accepted unions as an integral part of their firms, but until the 1970's overt anti-union behavior was not socially or politically acceptable. The compact forged in the 1930's and codified as public policy in the NLRA protected the union movement. In the 1960's employers began to implement effective strategies to remain nonunion when opening new plants. With the economic recessions of the 1970's and 1980's, more overt anti-union behavior became socially and politically

acceptable, turning what had been a stagnation of the union movement into a virtual rout. Explicit anti-union strategies, including such tactics as development of innovative nonunion personnel systems, active resistance to organizing efforts, and siting of plants in locations unsympathetic to unions, have become the standard mode of operation in U. S. industry.

While the change in the strategy of employers could be thought to be the result of changes in social and political attitudes that arose independently of economic factors, it is reasonable to conclude that both employers' strategies and general attitudes toward unions have been affected by the dramatic changes in the U. S. economy over the past two decades. These changes, toward an increasingly competitive economy, have made the costs of unionization to firms much higher than they were thirty or even twenty years ago.

What can the union movement do to recoup its losses? The results on the relationship between worker demand for union representation on the one hand and job satisfaction and union instrumentality on the other suggest that the task is to convince workers of the effective role that unions play in the workplace. However, it may be that until workers feel less satisfaction with their jobs, this is a nearly impossible task. The recurring theme is that the competitiveness of the economy has increased dramatically. Unions need to convince workers that they offer real value in a competitive environment.

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